Edge Server NAC Specifications

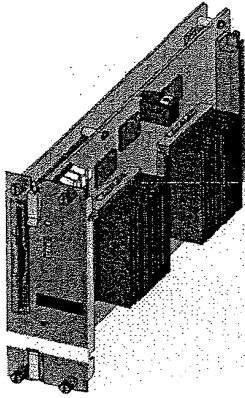**Table 18** Edge Server NAC Specifications

Specifications	Description		
Certification	Complies with FCC Part 15 Class A, FCC Part 68, UL-listed, CSA-approved, and IC-certified.		
Processor	AMD-K6-III, 450MHz		
Hard Drive	6GB capacity		
Operational memory	256MB of 100MHz built-in SDRAM and 2 DIMM sockets available for up to 768MB		
Data retention method	Clock, CMOS and chassis configuration values retained		
	Type	3V Lithium Cell	
	Retention	3 years	
Operating system	Microsoft Windows 2000		
Keyboard	PS/2 compatible		
Mouse	PS/2 compatible		
Video	SVGA compatible, 800x600, 16 color		
Midplane connector	180-pin DIN		
NAC management bus	512 kHz (data clock)		
(continued)			
PCI bus	25/33 MHz		
Physical dimensions	Length	32.89 cm(12.95 in.)	
	Width	4.01 cm(1.58 in.)	
	Height	17.53 cm(6.90 in.)	
Power requirements		Typical	Maximum
	+5V DC	2.8 A	3.5 A
	-5V DC	8 mA	20 mA
	+12V DC	29 mA	50 mA
	-12V DC	16 mA	50 mA
Environment	*Shipping and storage*		
	Temperature	0–65 °C (32–149 °F)	
	Relative humidity	5–95% (non-condensing)	
	Operating		
	Temperature	5–40 °C (41–104 °F)	
	Relative humidity	8–90% (non-condensing)	

⚠ **CAUTION:** *Never install a edge server card in a chassis without a fan tray! Heat damage to the edge server card's components could result.*
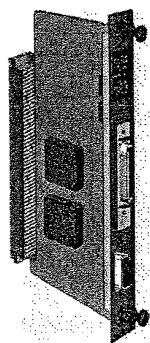
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**EdgeServer Pro NAC
Specifications**

Table 19 EdgeServer Pro NAC Specifications

| Specifications	Description
Certification	Complies with FCC Part 15 Class A, FCC Part 68, UL-listed, CSA-approved, and IC-certified.
	Electromagnetic compatibility (EMC):
	FCC Part 15 Class A, Radiated and Conducted
	EN 55022, EMI
	EN 55082, EMC
	Product safety:
	UL1950
	EN 60950
Processor	Intel Pentium Pro 200 MHz with 256k cache (standard configuration)
	Socket 8 for upgrade to second processor
Operational Memory	DRAM:
	4 x 168-pin DIMM sockets
	64MB (standard configuration for single processor) up to 1GB
	3.3V unbuffered EDO, 60ns DRAM
	Gold plated
	ECC
	VRAM: 1 MB (standard configuration)
Data Retention Method	Clock, CMOS and chassis configuration values retained by 3V lithium (coin) cell (CR2032), 192 mA hours
	Retention: up to 10 years (powered unit), 3 years in non-powered unit
Operating System	Microsoft Windows NT Server 4.0 with Service Pack 3
Video	SVGA compatible, 1024 x 768, 256 color
Disk Drives	Disk size/storageAccess rate
	IDE hard drive(s)2.5" / $\geq$2GB$\leq$12ms
	Floppy drive3.5" / 1.44MB94ms (avg.)
Current Draw	+5.2 VDC @ 10.5A single processor, typical maximum*
	* "Typical maximum" refers to the maximum current draw for most typical configurations.
Environment	Shipping and storage
	Temperature:0–65° C (32–149° F)
	Relative humidity:5–95% (non-condensing)
	Operating
	Temperature:5–40° C (41–104° F)
	Relative humidity:8–80% (non-condensing)
Dimensions	Length:32.89 cm (12.95 in.)
	Width:6.03 cm(2.37 in.)
	Height:17.53 cm(6.90 in.)

⚠ *CAUTION: Never install an EdgeServer Pro card in a chassis without a fan tray — heat damage to the card's components could result.*
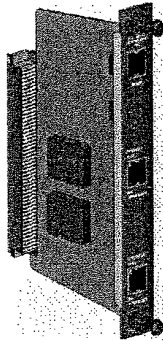
Peripheral NIC Specifications

Table 20 Peripheral NIC Specifications

Specifications	Description	
Certification	Complies with FCC Part 15 Class A, FCC Part 68, UL-listed, CSA-approved, and IC-certified	
Keyboard Port	Connector:	PS/2 compatible, 6 pin mini DIN (female)
	Pinout:	1 = Key data 2 = Not connected 3 = Ground 4 = Power, +5VDC 5 = Key clock 6 = Not connected
Mouse Port	Connector:	PS/2 compatible, 6 pin mini DIN (female)
	Pinout:	1 = Mouse data 2 = Not connected 3 = Ground 4 = Power, +5VDC 5 = Mouse clock 6 = Not connected
Video Port	Connector:	DB-15 video (female)
	Pinout:	1 = Red video (75 ohm, 0.7 V p-p) 2 = Green video (75 ohm, 0.7 V p-p) 3 = Blue video (75 ohm, 0.7 V p-p) 5 = Ground 6 = Red ground 7 = Green ground 8 = Blue ground 10 = Sync ground 13 = Horizontal sync (or composite sync) 14 = Monitor ID bit 3 All others = not connected.
SCSI Port	Connector:	Ultra-wide SCSI, 68 pin (female)
	Pinout:	1-16 = Ground 50 = Ground 17 = TERMPWR 51 = TERMPWR 18 = TERMPWR 52 = TERMPWR 19 = Not connected 53 = Not connected 20-34 = Ground 54 = Ground 35 = D12 55 = ATN 36 = D13 56 = Ground 37 = D14 57 = BSY 38 = D15 58 = ACK 39 = DP1 59 = Reset 40 = D0 60 = MSG 41 = D1 61 = SEL 42 = D2 62 = CD 43 = D3 63 = REQ 44 = D4 64 = IO 45 = D5 65 = D8 46 = D6 66 = D9 47 = D7 67 = D10 48 = DP0 68 = D11 49 = Ground

Table 20 Peripheral NIC Specifications (continued)

Specifications	Description
Current Draw	+5.2 VDC @ 1.5A typical maximum*
	* "Typical maximum" refers to the maximum current draw for most typical configurations.
Environment	Shipping and storage
	Temperature:-25–75° C (-13–167° F)
	Relative humidity:0–100% (non-condensing)
	Operating
	Temperature:0–40° C (32–104° F)
	Relative humidity:0–95% (non-condensing)
Dimensions	Length:12.07 cm(4.75 in.)
	Width:2.01 cm(0.79 in.)
	Height:17.53 cm(6.90 in.)

PCI Dual Ethernet NIC Specifications

Table 21 PCI Dual Ethernet NIC Specifications

Specifications	Description
Certification	Complies with FCC Part 15 Class A, FCC Part 68, UL-listed, CSA-approved, and IC-certified
	EMC:
	CISPR 22, Class B, Radiated and Line Conducted
	FCC Part 15, Class A, Radiated and Line Conducted
	VDE 0878
	EN 55022, EMI
	EN 55022, Electrostatic Discharge
	EN 55022, Immunity (Susceptibility), radiated and line conducted
	Mains Safety:
	UL 1950, as applicable in this case
	Final Product will be evaluated to UL 1950
	CSA approved C22.2 No. 0.7; C22.2 No. 225-M 1986; CSA 950
	IEC 950, IEC 380
	EN 41003, EN 60950

Interface Specifications			
	Serial Port (RS-232)		
		Electrical:	RS-232-C (EIA/TIA-232-E standard
		Connector:	RJ–45, 8-position modular jack
		Pinout:	1 = DSR
			2 = DCD
			3 = DTR
			4 = Ground
			5 = Receive data
			6 = Transmit data
			7 = CTS
			8 = RTS
		Configuration:	DTE
		Transmission method:	Unbalanced RS–232, 1-stop bit, no parity
		Transmission rate:	115,200 bps maximum
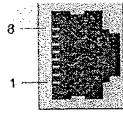
Table 21 PCI Dual Ethernet NIC Specifications (continued)

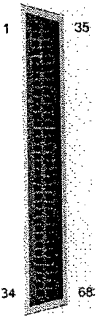| Specifications	Description	
	Ethernet 10Base-T/100Base-Tx port	
	Data transfer rate:	10/100 Mbps (auto-negotiated)
	Connector:	8-position modular jack (Stewart 88-360808 or equivalent)
	Pinout:	1 = Transmit + 2 = Transmit - 3 = Receive + 4 = Ground 5 = Ground 6 = Receive - 7 = Ground 8 = Ground
	Accessing scheme:	CSMA/CD (Carrier Sense Multiple Access with Collision Detection)
	Topology:	Star-wired hub (using multiport repeater)
	Maximum nodes:	Limited only by repeater used
	Transmission medium:	Unshielded twisted pair (UTP) **10Base-T:** CAT3 or CAT5 (CAT5 recommended) **100Base-Tx:** CAT5 only
	Network lobe distance:	100m (328 ft.) suggested maximum. Longer cabling can be used at the expense of reduced receiver squelch levels.
Current Draw	+5.2 VDC @ 2.0A typical maximum* * "Typical maximum" refers to the maximum current draw for most typical configurations.	
Environment	Shipping and storage Temperature:-25–75° C (-13–167° F) Relative humidity:0–100% (non-condensing) Operating Temperature:0–40° C (32–104° F) Relative humidity:0–95% (non-condensing)	
Dimensions	Length:12.07 cm(4.75 in.) Width:2.01 cm(.79 in.) Height:17.53 cm(6.90 in.)	

Edge Server SCSI NIC
Specifications

Table 22 Edge Server SCSI NIC Specifications

Specifications	Description	
Certification	Complies with FCC Part 15 Class A, FCC Part 68, UL-listed, CSA-approved, and IC-certified	
	EMI/EMC:	
	FCC Part 15, Class A, Radiated and Line Conducted	
	EN 55022, Class A	
	EN 55082	
	VCCI Class A	
	Austel AS/NZS 3548	
	Main Safety:	
	UL 1950, as applicable in this case	
	C-UL	
	EN 60950	
	IEC 950	
	CB Scheme	
Interface Specifications		
	Serial Port (RS-232)	
	Electrical:	RS-232-C (EIA/TIA-232-E standard
	Connector:	RJ–45, 8-position modular jack
	Pinout:	1 = DSR 2 = DCD 3 = DTR 4 = Ground 5 = Receive data 6 = Transmit data 7 = CTS 8 = RTS
	Configuration:	DTE
	Transmission method:	Unbalanced RS–232, 1-stop bit, no parity
	Transmission rate:	115,200 bps maximum
SCSI Port	Connector:	Ultra-wide SCSI, 68 pin (female)

Table 22 Edge Server SCSI NIC Specifications (continued)

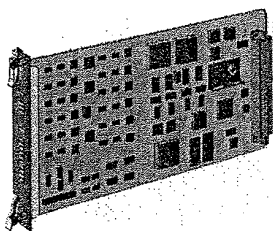| Specifications	Description
Pinout:	1-16 = Ground 50 = Ground 17 = TERMPWR 51 = TERMPWR 18 = TERMPWR 52 = TERMPWR 19 = Not connected 53 = Not connected 20-34 = Ground 54 = Ground 35 = D12 55 = ATN 36 = D13 56 = Ground 37 = D14 57 = BSY 38 = D15 58 = ACK 39 = DP1 59 = Reset 40 = D0 60 = MSG 41 = D1 61 = SEL 42 = D2 62 = CD 43 = D3 63 = REQ 44 = D4 64 = IO 45 = D5 65 = D8 46 = D6 66 = D9 47 = D7 67 = D10 48 = DP0 68 = D11 49 = Ground
Power Requirements	12V at 40 mA and 5V at 750 mA The 3.3V supply is regulated from the 5V supply on the edge server NIC.
Environment	Non-Operational Temperature:-30 to 90° C, (-22 to 194° F) Relative humidity:0–95% (non-condensing at 40° C) Operational Temperature:0–40° C, (32–104° F) Relative humidity:0–95% (non-condensing)
Dimensions	Length:12.07 cm(4.75 in.) Width:2.01cm(.79 in.) Height:17.53 cm(6.90 in.)

**HiPer DSP NAC
Specifications**

Table 23 HiPer DSP NAC Specifications

Specifications	Description	
Certification	Complies with FCC Part 15 Class A, FCC Part 68, UL-listed, CSA-approved, and IC-certified.	
	T1 HiPer DSP	
	Electromagnetic compatibility (EMI/RFI):	FCC 15A, EN55022 A
	Product safety:	UL 1950, C-UL, EN 60950, JATE
	Telco:	FCC 68, IC CS-03
	E1 HiPer DSP	
	Electromagnetic compatibility (EMI/RFI):	FCC 15A, EN55022 A, AUSTEL, VCCI
	Product safety:	UL 1950, C-UL, EN 60950, AUSTEL
	Immunity:	EN 50082
	Telco:	CTR4, FCC 68, IC CS-03
Processor	Board Manager System:	PowerPC RISC CPU
	Application Co-Processor System:	Dual PowerPC RISC CPUs
Operational Memory	Dynamic Random Access Memory (DRAM): 16 Mbytes	
	Static Random Access Memory (SRAM): 256Kbytes RISC memory, 2Mbytes shared memory, 12/16 DSPs x 64Kytes	
	Cache: 16Kbytes (program)/8Kbytes (data) for each RISC processor, total 32Kbytes (program)/16Kbytes (data)	
	Flash Memory: 2 Mbytes	
Data Retention Method	Flash memory	
Current Draw	T1 HiPer DSP	
	+5.2 V DC @ 4.3A typical maximum*	
	E1 HiPer DSP	
	+5.2 V DC @ 4.8A typical maximum*	
	* "Typical maximum" refers to the maximum current draw for most typical configurations.	
Environment	Shipping and storage	
	Temperature:-25–75° C (-13–167° F)	
	Relative humidity:0–100% (non-condensing)	
	Operating	
	Temperature:0–40° C (32–104° F)	
	Relative humidity:0–95% (non-condensing)	
Dimensions	Length:32.89 cm(12.95 in.)	
	Width:2.01 cm(.79 in.)	
	Height:17.53 cm(6.90 in.)	

HiPer DSP T1/E1 NIC Specifications
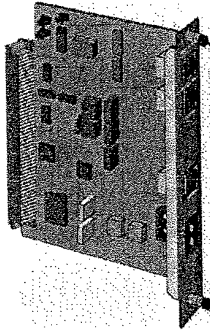
Table 24 HiPer DSP T1/E1 NIC Specifications

Specifications	Description		
Certification	See HiPer DSP NAC certification.		
Serial Ports (Console and Aux)	Electrical specification	RS-232-C (EIA/TIA-232-E standard)	
	Connector	RJ-45, 8 position modular jack	
	Pinout:	1 = DSR 2 = DCD 3 = DTR 4 = Ground 5 = Receive data 6 = Transmit data 7 = CTS 8 = RTS	
	Configuration	DTE	
	Transmission method	Unbalanced RS-232	
	Transmission rate		
	Console port:	9600 bps maximum	
	Auxiliary port:	115,200 bps maximum	
Span 1 Port	Electrical specification:		T1/E1 span line interface
	Connector:	RJ-48C, 8-position modular jack	
	Pinout:		1 = Receive ring 2 = Receive tip 4 = Transmit ring 5 = Transmit tip 6 = Transmit data 7 = CTS 8 = RTS
	Line rate:	T1: 1.544 Mbps	E1: 2.048 Mbps
	Input signal:	DS1 to -34 dB typical per AT&T Publication 64211	
	Output signal:	DS1 with line buildout of 0, -7.5, -15, or -22.5 dB (selectable)	
	Loop timing source:	Automatic fallback to alternate source	
	Line loopback support:	Telco-initiated per AT&T Publication 54016	
	Specifications:	ANSI T1.403	TBR-12
		ANSI T1.408	TBR-13
		ITU G.703	ETSI 300-166
		ITU G.736	ETSI 300-233
		ITU G.775	I.431/ETSI ETS 300 011
		ITU G.823	AT&T Publication 62411

Table 24 HiPer DSP T1/E1 NIC Specifications (continued)

Specifications	Description		
		Channelized T1 (CH T1) and T1/PRI Application	*Framing:*
			SF (Super Frame also known as D4)
			ESF (Extended Super Frame)
			Line coding:
			CH T1:
			B8ZS (Binary Eight Zero Code Suppression)
			AMI (Alternate Mark Inversion)
			ZCS (Zero Code Suppression)
			T1/PRI:
			B8ZS (Binary Eight Zero Code Suppression)
		E1/PRI Application	*Framing:*
			CEPT CCS without CRC-4 (used with VN-4 and some NET5 countries)
			CEPT CCS with CRC-4 (used with NET 5 countries)
			Line coding:
			HDB3 (High Density Bipolar 3 Zeroes)
	Interfaces:	DS1 (Long Haul applications): Connecting CPE equipment to the Telco's T1 or Smart Jack up to 6000 feet away.	
		DSX-1 (Short Haul applications): Connecting CPE equipment to the Telco's T1 jack up to 600 feet away.	
Monitor Port	Connector:	Bantam Jack	
	Configuration:	Non-intrusive Bridge Mode	
	Isolation Resistance:	430 ohms	
	Attenuation:	-6 to -10 dB	

Table 24 HiPer DSP T1/E1 NIC Specifications (continued)

Specifications	Description
Current Draw	+5.2 VDC @ 600mA typical maximum*
	* "Typical maximum" refers to the maximum current draw for most typical configurations.
Environment	Shipping and storage
	Temperature:-25–75° C (-13–167° F)
	Relative humidity:0–100% (non-condensing)
	Operating
	Temperature:0–40° C (32–104° F)
	Relative humidity:0–95% (non-condensing)
Dimensions	Length:12.07 cm(4.75 in.)
	Width:2.01 cm(0.79 in.)
	Height:17.53 cm(6.90 in.)

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A

GLOSSARY

This appendix lists acronyms and terminology used in the CommWorks VoIP application.

A-Link   Access link. SS7 Signaling link used to connect the Signaling Transfer Point (STP) and Signaling Switch Point (SSP).

ACF   Admission Confirm—This is a call flow message.

AMI   Alternate Mark Inversion—A line encoding scheme for transmitting data bits over T1 and E1transmission systems.

ANI   Automatic Number Identification—The billing number of the person making the phone call. ANI allows the calling party to be billed without having to enter a PIN.

ARJ   Admission Reject—This is a call flow message.

ARQ   Admission Request—This is a call flow message.

AIS   Alarm Indication Signal—Formerly referred to as a 'blue alarm' or 'blue signal'. This is a signal that is created when a maintenance alarm indication has been activated. This signal is transmitted downstream informing that an upstream failure has been detected.

AS   Autonomous System—An independent system.

AUX   Auxiliary—Backup or acting as a redundancy on the system.

B8ZS   Binary Eight Zero Code Suppression—Line-code type, used on T1 and E1 circuits. A special code replaces any eight consecutive zeros that are sent over the link. This code is then interpreted at the remote end of the connection. This technique guarantees ones density independent of the data stream. Sometimes this is referred to as bipolar 8-zero substitution.

BHCA   Busy Hour Call Attempts—The number of calls attempted within 60 minutes during the busiest times during the day.

CC   Country Code—When calling outside of the country, the called number consists of the country code, identifying the country where the person to be called resides and a NSN (National Significant Number). The code of the country is the first three digits dialed.

CCS   Common Channel Signal—This is a Bellcore definition: A network architecture which uses Signalling System 7 (SS7) protocol for the exchange of information between telecommunications nodes and networks on an out-of-band basis.

CD	Collision Detection—A process where a simultaneous transmission has taken place. Workstations can determine if this has happened if they do not receive an acknowledgement from the receiving station within a certain amount of time. When this occurs, the workstation will try again.
CDR	Call Detail Record—Information gather during the call used later for billing purposes.
CE	Connection Endpoint—A terminator at one end of a layer connection within SAP.
CEPT	Conférence des administrations Européenes des Postes et Télécommunications (European Conference of Postal and Telecommunications Administrations)—A standards committee in Europe for the telecommunications industry.
CHS	Cylinder-head Sector—The method of identifying a given location on a hard drive.
CISPR	International Special Committee on Radio Interference
CLI	Command Line Interface—A software interface allowing the user to interact with the operating system by entering commands and optional arguments. The UNIX operating system runs at the command line from a shell prompt or a shell script.
CMOS	Complementary Metal Oxide Semiconductor
CNG	Comfort Noise Generation—The process of adding white noise to the voice channel so the people know the connection is still good when neither party is talking.
CO	Central Office—The telephone company facility where the request for service comes through the switching equipment and the requests for service gets routed.
CommWorks IP Telephony System	A total system of hardware and software components that route telephone calls and data over an IP based network (VoIP).
CPE	Customer Presence Equipment—A piece of equipment that is attached to a telephone network. This equipment would be the terminal equipment, telephones, key systems, modems, video conferencing devices and so on.
CPU	Central Processing Unit—The part of the computer that executes the commands and performs the logic.
CRC	Cyclic Redundancy Check—The process to determine if the data was received properly.
CSA	1. Call Path Services Architecture—An architecture developed by IBM which defines the protocols that allow communications between the telephones switches and computers. 2. Carrier Serving Area—A method used to categorize the local loops by length, gauge, and subscriber distribution for maximum service and cost efficiency.

CSMA	Carrier Sense Multiple Access—Media-access mechanism wherein devices ready to transmit data first check the channel for a carrier. If no carrier is sensed for a specific period of time, a device can transmit. If two devices transmit at once, a collision occurs and is detected by all colliding devices. This collision subsequently delays retransmissions from those devices for some random length of time.
CTS	Clear to Send—Hardware signal defined by the RS-232 specification that indicates that a transmission can proceed.
CLASS	Custom Local Area Signaling Services—CLASS is a service mark of Bellcore. It is the signaling service available such as caller-id, call waiting, and auto-redial.
DCD	Data Carrier Detected—Hardware signal defined by the RS-232-C specification that indicates that a device such as a modem is online and ready for transmission.
DCE	Data Communication Equipment—A communications device that can establish, maintain, and terminate a connection (for example, a modem). A DCE may also provide signal conversion between the data terminal equipment (DTE) and the common carrier's channel.
DCF	Disengage Confirm—This is a call flow message.
DHCP	Dynamic Host Configuration Protocol—A protocol that allows network administrators to centrally manage and automate the assignment of Internet Protocol (IP) addresses in their organization's network.
DHTML	Dynamic Hypertext Markup Languages—A name for a set of programs that developers can use to create Web pages that update themselves on the fly. Dynamic HTML makes your Web documents more interactive than HTML.
DIMM	Dual Inline Memory Module—Has a 10% higher capacity bandwidth than Single In-line memory module (SIMM). The DIMM's data path is 128 bits wide.
DIN	Deutsche Institute fur Normung (German Institute for Standardization)—DIN specifications are issued under the control of the German government. The most common specification is the dimensions of cable connectors referred to as DIN connectors.
DINS	Dialed Number Identification Service
DIP	Dual Inline Package—These are small on and off switches on the circuit board used to configure the board in a semipermanent way. The DIP switches are the first thing to look at when a configuration isn't what you intended after an installation.
DMS	Digital Multiplex System—A digital switch that is used in a central office. It contains multiple devices to handle the many needs of the system. Such as, local/toll exchange, long distance switch, international gateway, local and long distance switch, wireless, and advanced signaling solutions.
DNS	Domain Name Server—System used in the internet for translating names of network nodes into addresses.

DRAM	Dynamic Random Access Memory—The readable/writable memory used to store data in PCs. DRAM stores each bit of information in a "cell" composed of a capacitor and a transistor.
DRJ	Disengage Reject—This is a call flow message.
DRQ	Disengage Request—This is a call flow message.
DS	Digital Signal—Standard specifying the electrical characteristics for data transmission over four-wire telco circuits. DS1 is 1.544 Mbps, and DS3 is 44.736 Mbps. Also referred to as T1 and T3.
DS0	1. Digital Signal level zero—It is equivalent to one voice conversation digitized under PCM. It transmits digital signals over a single channel at 64-kbps on a T1 facility 2. Data Slot 0
DSP	Digital Signaling Processors—A special computer chip designed to process digital signals that were originally analog signals.
DSR	Data Set Ready—This is a call flow message.
DTE	Data Terminal Equipment—End-user equipment, typically a terminal or computer, that can function as the source or destination point of communication on the network.
DTMF	Dual Tone Multi-frequency—The sounds a touch-tone telephone makes when its keys are pressed.
DTR	Data Terminal Ready—A control signal that is activated to let the DCE know when the DTE is ready to send and receive data.
DTS	Data Transformation Service—Technology designed for bypassing functions for short-hop, line-of-sight applications. It never converts to analog. Its main use is in high volume, data only applications in urban areas where line costs are higher.
ECC	Error Correcting Code—Code that determines whether line noise has caused data to be garbled or dropped in transit, and then works to correct the problem. The two most common error-correction protocols and standards used by analog modems are MNP and V.42.
EdgeServer Pro Card	This card on the Total Control Chassis runs Windows NT 4.0 Server, provides two 10/100-Mbps ethernet interfaces, and routes call over IP networks.
Edge server card	This card on the Total Control Chassis runs Windows 2000 Server, provides two 10/100-Mbps ethernet interfaces, and routes call over IP networks.
EDO RAM	Extended Data Out Random Access Memory—A more efficient method to access memory. It reduces access memory time by 10% over the standard DRAM chips.
EIA	Electronic Industries Alliance—A trade organization who sets standards for electronics.
EMC	Electromagnetic Compatibility—The ability of a device or system to function without error in its intended electromagnetic environment.
EMI	Electromagnetic Interference—The leakage of radiation from equipment.

ESD   Electrostatic Discharge—Discharge of stored static electricity that can damage electronic equipment and impair electrical circuitry, resulting in complete or intermittent failures.

ESF   Extended Super Frame—Framing type used on T1 circuits that consists of 24 frames of 192 bits each, with the 193rd bit providing timing and other functions. ESF is an enhanced version of super frame (SF).

ESIG   Extended Signaling—A system internal to Total Control which ingresses and distributes SS7 signaling throughout the Chassis via the packet bus.

ETSI   European Telecommunications Standards Institute—Similar to the ANSI in the United States. It's purpose is to provide standards for the telecommunications industry.

FCC   Federal Communications Commission—A United States federal regulatory agency which oversees all aspects of the communications industry, TV, radio, telephone etc. in the United States.

FTP   File Transfer Protocol—Application protocol, part of the TCP/IP protocol stack, for transferring files between network nodes. FTP is defined in RFC 959.

GCF   Gatekeeper Confirm—This is a call flow message.

GK   Gatekeeper—A device that manages an IP network, supporting all gateways, user profiles, and authentication. A gatekeeper is defined by the H.323 standard.

GRJ   Gatekeeper Reject—This is a call flow message.

GRQ   Gatekeeper Request—This is a call flow message.

GSM   Global System for Mobile Communications—The European standard for digital cellular service using slow frequency-hopping and TDMA.

GW   VoIP Media Gateway—A CommWorks VoIP device that can interconnect networks with different, incompatible communications protocols. The gateway performs a layer-7 protocol-conversion to translate one set of protocols to another (for example, from TCP/IP to SNA or from TCP/IP to X.25). A gateway operates at OSI layers up through the Session Layer.

GUI   Graphical User Interface—A software interface based on pictorial representations and menus of operations, commands, and files. Opposite of the operating system command line interface.

HDB3   High Density Bipolar Three Zeros—A bipolar coding method that does not allow more than three consecutive zeros in the line signaling.

HDM   High Density Modem—The HiPer DSP card in the VoIP system. It implements the PSTN interface and CODEC functions of the VoIP system. It contains 24 channels per card (T1-PRI) or 31 (E1-PRI) channels per card.

IC   Industry Canada—A department of the Canadian government. It serves to promote all aspects of Canada's economy. It's charter is to improve conditions for investment, improve innovation performance, increase Canada's share of global trade and build a fair, efficient and competitive marketplace.

IDE Integrated Drive Electronics—Standard interface to the hard disk drive on the PC.

IEC International Electrotechnical Commission—The international standards body for electrotechnology.

IIS Internet Information Server—Microsoft Windows NT web based server. It allows you to create control and manage a web site remotely.

IMT Inter-Machine Trunks—In the SS7 network, the IMT is the channel that carries the data to the SSP.

ISUP Intergrated Services Digital Network User Part —This is the control function of the SS7 protocol. It determines the call setup, administration, and call take down on the SS7 network. In the SS7 system with VoIP enabled, the ISUP commands are converted to SLAP commands.

I/O Input/Output

IP Internet Protocol—A set of instructions that controls the node addresses, routes the messages, and so on of the internet.

IP Telephony Manager IP Telephony Manager is a software application developed by CommWorks, a division of 3Com, that runs on a UNIX management station. This application remotely manages 3Com Network Application Cards (NACs) and Network Interface Cards (NICs) through a Network Management Card (NMC) installed on the CommWorks 5210 IP Telephony Platform.

ISA Industry Standard Architecture—The most common bus architecture on the motherboard of a MS-DOS based computer.

ISDN Integrated Service Digital Network—A system that provides simultaneous voice and high-speed data transmission through a single channel to the user. ISDN is an international standard for end-to-end digital transmission of voice, data, and signaling.

ITG Internet Telephony Gateway— A bridge between traditional circuit-switched telephony and the internet that extends the advantages of IP telephony to the standard telephone by digitizing the standard telephone signal (if it isn't already digital), significantly compressing it, packetizing it for the internet using Internet Protocol (IP,) and routing it to a destination over the internet.

ITU International Telecommunications Union—An organization established by the United Nations, of which almost every nation is a member. Its charter is to define standards for telegraphic and telephone equipment.

LAN Local Area Network—A short distance data communications network. Usually found within a building or a campus environment.

LCF Location Confirm—This is a call flow message.

LEC 1. Local Exchange Carrier—The telephone company servicing the local area. 2. Line Echo Canceler—A module placed on the line to keep the noise and vibration on the line to a minimum.

LED Light Emitting Diode—Semiconductor device that emits light. Status lights on hardware devices are typically LEDs.

LRJ   Location Reject—This is a call flow message.

LRQ   Location Request—This is a call flow message.

MBP   Management Bus Protocol—This protocol was developed by 3Com and is used in the NMC to communicate to the other cards in the Total Control chassis.

MFC   Multifrequency Compelled—An E1 call setup protocol that requires the signals to be acknowledged.

MIB   Management Information Base—A key element of SNMP management systems. A collection of objects that can be accessed via a network management protocol; holds information about all resources managed by a network management system.

NAC   Network Access Card—the card in front of the Total Control chassis. It connects to the NIC in back. It allows the Total Control chassis to receive information from the NMC, then processes it and sends it out the NIC.

NANP   North American Numbering Plan—The scheme used to identify the telephone trunks. It is composed of a three digit prefix and the four-digit suffix.

NDC   National Destination Code—Used to identify a Public Land Mobile Network (PLMN) within a country.

NAC   Network Application Card—In the Total Control chassis, this card is located in the front of the chassis. It allows communication to the VoIP application.

NIC   Network Interface Cards—In the Total Control chassis, this card is located in the back of the chassis. It allows access to the network.

NMC   Network Management Card—The NMC provides the management of all the cards in the Total Control chassis.

NLP   Non-Linear Processing—Processing of a request for service that does not take the normal route as defined by the PSTN.

NMC   Network Management Card—Manages all of the devices in the Total Control chassis under the direction of a PC running IP Telephony Manager software.

NSM   Non-Standard Message—A type of non-standard message that is allowed by ITU T.30.

NTFS   NT File System—The file system on Windows NT servers.

NTP   Network Time Protocol—Protocol built on top of TCP that assures accurate local time-keeping with reference to radio and atomic clocks located on the internet. This protocol is capable of synchronizing distributed clocks within milliseconds over long time periods.

NVRAM   Non-volatile Random Access Memory—Ram that retains its contents when a unit is turned off.

OOBMAN   Out-of-band Manager—OOBMan is an application that runs on 3Com Windows NT components of the CommWorks IP Telephony platform.

It is designed to allow a user to dial into an NT device, using a terminal emulation program such as Hyperterminal, and view or modify various configuration information on that machine.

OS   Operating System—A software program that controls and manages the operations of a computer system.

OOF   Out-of-frame—OOF conditions occurs in a T1 transmission when two or more out of four consecutive framing bits are in error.

OOS   Out-of-service—The term used when a module or card is not functioning. It could be because VoIP has taken it OOS due to errors, or because the card or module has been removed from the chassis.

PCI   Peripheral Component Interconnect—Designed by Intel. It is a 32-bit local bus on a PC to transfer data between the CPU and the peripherals.

PCM   Pulse Code Modulation—Technique for converting an analog signal to a digital signal.

POTS   Plain Old Telephone System—Standard telephone service used by most residential locations. See PSTN.

PRI   Primary Rate Interface—ISDN interface to primary rate access. In the U.S., the Primary Rate Interface is split into 23 B channels and one 64 Kbps D channel. PRI is delivered over the same physical link as a T1, or 1.55 Mbps link. In Europe, PRI is split into 30 B channels and one 64 k bit/second D channel and is delivered over the same physical link as an E1.

PSI   Power Supply Interface—The card on the chassis that controls the power for the chassis.

PSTN   Public Switched Telephone Network—The analog dial-tone-type telephone networks and services in place worldwide, with transmission rates up to 52Kbps. In contrast, telephone services based on digital communications lines, such as ISDN, have higher speeds and bandwidths. The POTS networks also called the public switched telephone network (PSTN).

PSU   Power Supply Unit—This unit is part of the Total Control chassis. It controls the power to the chassis. The PSU can be either AC or DC power with 35A, 45A, 70A, or 130A ratings.

QOS   Quality of Service—An indicator of the performance of a transmission system on the Internet and other networks. QoS is measured in transmission rate, error rates, latency, and other characteristics, and can to some extent be guaranteed to a customer in advance.

RAS   Remote Access Service—Remote access is sending and receiving data to and from a computer or controlling computer with terminals or PCs connected through phone/communications links. A remoter access service provides this function.

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RCF   Registration Confirm—This is a call flow message.

RISC   Reduced Instruction Set Computer— Central processing unit architecture that greatly reduces processing time by having fewer, simpler instructions programmed into ROM, but allowing for complex processing by combining these simple instructions; primarily used in workstations.

RFI   Radio Frequency Interface—An interface of a programmable switch matrix between the RF test instruments of a CASS RF or CNI configuration to a series of front panel bulkhead connectors.

RRAS   Routing and Remote Access Service—Microsoft Windows NT's (RRAS) Routing and Remote Access Service is used for terminating RAS/PPP calls on a Microsoft Windows NT system.

RRJ   Registration Reject—A registration request from an H.323 Gateway to an H.323 Gatekeeper was rejected.

RRQ   Registration Request—An H.323 Gateway has requested to register with a remote H.323 Gatekeeper endpoint.

RTP   Real Time Protocol—The format of the audio/voice data as it travels through VoIP.

RTS   Request to Send—An RS-232 signal provided by a DTE device to a DCE device saying "I am ready when you are". The RTS/CTS RS-232 signals are often used for flow control between a modem and serial port.

SCSI   Small Computer System Interface—The way the peripherals communicate with the computer's main processor.

SDL   Signaling Data Link or Software Download

SF   Super Frame—Common framing type used on T1 circuits. SF consists of 12 frames of 192 bits each, with the 193rd bit providing error checking and other functions. SF is superseded by ESF, but is still widely used. Also called D4 framing.

SCP   Service Control Points—The SCP stores customer specific information for example, toll free numbers, and converts the information received from the incoming call and directs the call to its destination.

SIP   Session Initiation Protocol—Provides advanced telephony services across an IP network.

SGP   Signaling Gateway Platform—This is the SS7 Signaling Gateway platform. 3Com's SS7 signaling Gateway is an intelligent service exchange node that integrates services between the circuit and packet networks to deliver significant cost savings with IMTs for voice trunk access instead of ISDN PRIs.

SLAP   Signaling LAN Application Protocol—SLAP is the interface between the Total Control Chassis and the external SS7 Gateway system. It replaces the D-channel signaling that normally exists in an ISDN PRI interface. SLAP is 3Com's proprietary software.

SSP   Signaling Switch Point—Simply put, this is the telephone switch.

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SS7 Signaling System 7—A global standard for telecommunications as defined by the International Telecommunication Union (ITU). The SS7 standard defines the procedure protocol by which network elements in the PSTN exchange information over a digital signaling network.

SMS System Management Services—Allows provisioning and updating of information on subscribers and services in near-real time for billing and administrative purposes.

SNMP Simple Network Management Protocol—Standardized method of managing and monitoring network devices on TCP/IP-based internets. A standard way for computers to share networking information. In SNMP, two types of communicating devices exist: agents and managers. An agent provides networking information to a manager application running on another computer. The agents and managers share a database of information, called the Management Information Base (MIB). An agent can use a message called a traps-PDU to send unsolicited information to the manager.

SQL Structured Query Language—A standard interactive and programming language for requesting information from and updating databases.

SRAM Static Random Access Memory—Type of RAM that retains its contents for as long as power is supplied. SRAM does not require constant refreshing, like DRAM.

SS Silence Suppression—A way to save on bandwidth by not transmitting the silences or gaps in conversation. A voice compression process where the time when there is no voice being transmitted over the line during a conversation, that space is filled with data, and video transmission on the line.

SST Silence Suppression Threshold—The limit of silence allowed on the voice transmission before data, and video packets are sent on the line. This can be defined by the user.

STP Signal Transfer Point—SS7 Signal Routing Node. It is a very reliable packet switch used to forward signaling messages in an SS7 network. The network switches and the SCPs connect directly to the STPs for message routing.

SVGA Super Video Graphics Array—An enhancement of the VGA display standard. SVGA can display at least 800 pixels horizontally and about 600 lines vertically.

TCM Total Control Manager—See IP Telephony Manager.

TCP Transmission Control Protocol—Connection-oriented protocol that provides a reliable byte stream over IP. A reliable connection means that each end of the session is guaranteed to receive all of the data transmitted by the other end of the connection, in the same order that it was originally transmitted without receiving duplicates.

TDM Time Division Multiplexing—A technique in which information from multiple channels can be allocated bandwidth on a single wire based on preassigned time slots. Bandwidth is allocated to each channel regardless of whether the station has data to transmit.

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TDMA	Time Division Multiplexing Adapter—A device that allows analog voice and data devices to work through an ISDN connection. The terminal adapter is a protocol converter that adapts equipment not designed for ISDN, such as phones, faxes, and modems.
TFTP	Trivial File Transfer Protocol—simplified version of the File Transfer Protocol (FTP) that transfers files but does not provide password protection or user directory capability.
Total Control Manager	TCM—See IP Telephony Manager.
UCF	Unregistration Confirm
UDP	User Datagram Protocol—Connectionless transport layer protocol in the TCP/IP protocol stack. UDP is a simple protocol that exchanges datagrams without acknowledgments or guaranteed delivery, requiring that error processing and retransmission be handled by other protocols. UDP is defined in RFC 768.
UI	User Interface—In telephony terms, this is the reference point for the BRI connection between a telephone company local loop and the customer equipment.
UL	Underwriters Laboratory—A non-profit laboratory that examines and tests items submitted by their manufactures for safety.
UNC Names	Universal Naming Convention Names—Naming conventions for file names or other resources beginning with '\\', indicating that they exist on a remote computer.
URJ	Unregistration Reject—This is a call flow message.
URQ	Unregistration Request—This is a call flow message.
UTP	Unshielded Twisted Pair— Four-pair wire medium used in a variety of networks. It consists of copper conductors that are electrically balanced.
VDE	Verbund Deutscher Electronicker—Federation of German Electrical Engineers, similar to the IEEE in the United States.
VFPD	Virtual Front Panel Display—Refers to the GUI display of the Total Control 1000 chassis.
VoIP	Voice Over Internet Protocol—A set of protocols for managing the delivery of voice and data information using the Internet Protocol (IP). Voice and data information is sent in digital form in discrete packets over the Internet instead of in analog form over the public switched telephone network (PSTN). A major advantage of VoIP is that it avoids the tolls charged by ordinary telephone service.
VRAM	Virtual Random Access Memory
WAN	Wide Area Network—Public or private computer network serving a wide geographic area.

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ZCS   Zero Code Suppression—Used primarily with T1. The insertion of a one bit to prevent the transmission of eight consecutive zeros on an active line. When eight or more consecutive zeros are detected on the line, the system considers the line inactive, and releases the line.

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